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Ward, D. J. H.—What is God? Dover, 1896. From the author.

White, C. A.—Memoir of George Engelmann, M. D., 1809–1884. Extr. Biog. Mem. Natl. Acad., Vol. IV, 1896. From the author.

Wieland, G. R.—*Archelon ischyros:* A new gigantic Cryptodire Testudinate from the Fort Pierre Cretaceous of South Dakota. Extr. Amer. Journ. Sci., Vol. II, 1896. From the author.

General Notes.

PETROGRAPHY.[1]

Mud Enclosures in Triassic Trap of New England.—Emerson,[2] in an interesting and well illustrated paper, gives an account of tuff deposits at Granby and Holyoke, Mass., and of a sandstone containing fragments of a diabase very rich in feldspar existing a few feet above the Holyoke trap sheet in the valley between Tom and Little Mountains. At Dibbles and at other places the normal 'trap' of the region is filled with enclosures of a calcareous mud, which are so related to the enclosing rock as to leave no doubt that the mud was forced into the trap before solidification took place. In its advance the rolling lava sheet carried some of the mud beneath it, so that it now contains a muddy lower layer as well as a muddy upper layer. In places, especially near Greenfield, Mass., the trap, which is mainly a diabase, solidified as pitchstone, as a result probably of the action of the steam generated by the heating of the lower mud stratum. In these places the lower portion of the sheet is a mixture of sand, fragments of sandstone, fragments of diabase and of pitchstone, all cemented together by glass, which is cracked and shattered. In the crevices thus formed albite, diopside and other minerals have been deposited. Elsewhere, sandstones and diabase glass, trap and breccia are intermixed in great confusion. The petrographical description of all the types of breccia and pitchstones are faithfully given by the author. The glasses in the glass breccia of Meriden, analyzed by Stokes, is composed as follows:

SiO_2	TiO_2	CO_2	P_2O_5	F	Al_2O_3	Fe_2O_3	FeO	MnO	BaO	CaO	MgO	K_2O	Na_2O	H_2O	Total
46.86	1.13	2.19	.15	tr	13.96	5.23	4.67	tr	.03	9.42	7.69	2.02	1.85	4.72	= 99.92

The lava sheet is supposed to have moved over the bottom of a water basin blending with the mud and sand with which this bottom was covered. The mud was drawn up into the liquid lava by currents, and the great amount of water thus introduced caused it to solidify locally as a spherulitic glass with the composition indicated above. Explosions of steam took place before the glass had completely cooled, forming a breccia of mud, sand, solidified lava, partially solid glass. At one place this mixture broke through the trap sheet forming a mud volcano. A large number of handsome plates illustrate the descriptions.

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[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] Bull. Geol. Soc. Amer., Vol. 8, p. 59.

A Keratophyre Dyke near New Haven.—Hovey[3] declares that a keratophyre dyke cuts the Triassic sandstones near New Haven, Conn. It is one of seven dykes, the remaining six being diabases. The keratophyre contains two sets of feldspar phenocrysts. One set consists of large crystals of albite and the other of acicular crystals of anorthoclase. The matrix in which these lie looks like a devitrified glass. Analysis gave:

SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	Mno	MgO	CaO	Na_2O	K_2O	Ign	Total
60.13	tr	20.47	1.04	.72	tr	1.15	2.59	9.60	1.06	3.44=	100.20

The loss on ignition is largely CO_2. This is the first acid dyke reported in the Triassic sandstone of the Atlantic border.

The Gabbros near Ronsperg, Bohemia.—A group of rocks belonging to the gabbro family is described by Martin[4] from the vicinity of Ronsperg, Bohemia. Gabbros and olivine-gabbros are the principal rock types met with. They constitute intrusive layers between pegmatite and amphibolite. Near the amphibolite the gabbros grade into quartz diorites. At Hoslau a smaragdite gabbro occurs in scattered ledges, and between these, near a granite with which the basic rock may be in contact, are ledges of norite. Wehrlite ledges are also found in the same vicinity. These are believed by the author to be basic inclusions in the intrusive rock. The olivine of the olivine-gabbro is often surrounded by a rim consisting of orthorhombic pyroxene, brown, green and colorless hornblende, and spinel, all of which are thought to be secondary. Diallage and orthorhombic pyroxenes, and this mineral and olivine, are often in parallel growths when all are original. The smaragdite-gabbro is much decomposed, its diallage having been changed to smaragdite and its plagioclase to cloudy grains filled with zoisite and clinochlor.

Exotic Blocks in the Eocene Schists of the Alps.—The Eocene schists of the Alps have long been known to include exotic blocks or boulders, that are different in character from the blocks and boulders found in the glacial drift of the district. König[5] has recently described those occurring in the schists near Stockerau as micro-granites, granophyres, granites, gneisses and mica schists, but has not succeeded in tracing them to their origin.

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[3] Amer. Jour. Sci., III, 1897, p. 287.

[4] Min u. Petrog. Mitth., XVI, 1896, p. 105.

The Eleolite-Syenite of the Serra Monchique.—Kraatz,[6] Koschlau and Hackman give a very thorough account of the well known eleolite-syenites of the Serra Monchique, Portugal. Two principal types of the rock are distinguished. One is the coarse grained type from Picota and the other a finer grained type from Foia. These are crossed by streaks (Schlieren) of fine grained rock, and in them are basic concretions. The eleolite-syenite has produced marked contact effects in the surrounding sedimentaries and has suffered corresponding changes on the periphery of its mass. A system of dykes cutting the syenite comprises bostonite-porphyry, leucite-tinguaite, vitrophyre, ægirine-tinguaites, eleolite-syenite porphry, camptonitic-tinguaites, nepheline-tephrite, monochiquite and camptonite.

The Picota rock may be a deeper facies than the Foia rock. It consists essentially of eleolite and feldspar, with a few dark colored components forming a granitic or a trachytic aggregate. The dark colored components are diopside, often with an ægirine or an ægirine-augite border, sphene, biotite and lavenite. Except the first named they are all in small quantity. Analyses show the presence of 37.44% soda-orthoclase, 24.34% albite, 14.43% nepheline, 11.6% augite, 10.21% lepidomelane and .22% sphene. The Foia rock differs from the Picota type in the presence of but a small quantity of nepheline and in its finer grain. In some of its varieties it resembles strongly the pulaskite of Arkansas both in appearance and in composition. An analysis of the Portugese rock yielded:

SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	MgO	CaO	K_2O	Na_2O	H_2O	Total
60.42	—	19.23	.63	3.19		.67	1.73	6.88	6.99	1.74	= 101.48

Near the village of Monchique a pegmatitic pulaskite or eleolite-syenite was met with, the only instance of a pegmatite discovered in the district.

The streaks (Schlieren) in the Picota rock are more acid than the body of the rock, one in the Foia area contains a hornblende of the katophorite-arfvedsonite series, otherwise they present no unusual features.

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[5] Min. u. Petrog. Mitth., XV, p. 466.

[6] Ib., p. 197.

One of the basic concretions in the Picota area has the composition of teschenite. Its analysis gave:

SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	CO_2	P_2O_5	H_2O	Total
49.67	4.14	14.56	6.09	6.41	4.66	14.87	4.25	1.94	.40	.52	1.18	= 100.82

Another is an essexite with the composition:

SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	H_2O	Total
49.67	not det.	17.99	13.06		3.06	6.63	6.21	2.62	.86	= 100.10

The contact products formed in the surrounding slates, graywackes and quartzites are hornstones, knotty schists and other contact schists like those so frequently found around bosses of granite. Diabase hornstones (cordierite-bearing and cordierite-free) are contact facies of igneous rocks in the vicinity of the syenite intrusion.

Notes.—Jaggar[7] has constructed a simple instrument to use on the microscope stage for inclining a thin section in such a manner that optical axial angles may be observed in sections cut at random.

Merrill[8] continues his contributions to the study of rock weathering in a paper on the weathering of micaceous gneisses in Albemarle Co., Virginia. The results communicated confirm those obtained in previous investigations. The red color of the residual soil in this case, as well as in the south generally, is thought to be purely a superficial phenomenon. It is accounted for by the accumulation of the coloring matter distributed through the rock in the residue left by the weathering processes. Brilliant colors in residual soils are thus regarded as evidences of long continued weathering action. The author would limit the use of the term 'weathering' to the alteration "processes going on within the zone of oxidation and resulting as a rule in the destruction of a rock mass as a geological body." The deeper seated changes resulting in the alteration of the rock constituents without changing the character of the rock as a whole, he would term hydrometamorphism.

[7] Amer. Jour. Sci., III, 1897, p. 129.

[8] Bull. Geol. Soc. Amer., Vol. 8, p. 157.